

Case No. 4221

5     UNCHARGED POLYMERS FOR SEPARATION OF BIOMOLECULES  
          BY CAPILLARY ELECTROPHORESIS

10           Abstract of the Invention

15           The invention provides uncharged water-soluble silica-adsorbing polymers for  
suppressing electroosmotic flow and to reduce analyte-wall interactions in capillary  
electrophoresis. In one aspect of the invention, one or more of such polymers are  
employed as components of a separation medium for the separation of biomolecules,  
such as polynucleotides, polysaccharides, proteins, and the like, by capillary  
electrophoresis. Generally, such polymers are characterized by (i) water solubility over  
the temperature range between about 20°C to about 50°C, (ii) concentration in a  
separation medium in the range between about 0.001% to about 10% (weight/volume),  
20   (iii) molecular weight in the range of about  $5 \times 10^3$  to about  $1 \times 10^6$  daltons, and (iv)  
absence of charged groups in an aqueous medium having pH in the range of about 6 to  
about 9. In one embodiment, polymers of the invention are selected from the group  
consisting of polylactams, such as polyvinylpyrrolidone; N,N-disubstituted  
polyacrylamides; and N-substituted polyacrylamides. In accordance with the method of  
25   the invention, a sufficient amount of polymer adsorbs to the capillary surface to establish  
a zone of high viscosity that shields the analyte from the wall and impedes the  
movement of an electrical double layer under an electric field.